Hence there are six sets of solutions:

$$x=0,\ y=0;\ x=-\frac{p}{m}\omega^3,\ y=-\frac{p}{m}\omega^2.$$

(2) Solution of the simultaneous equations

$$mx^4+py=0,\ my^3+px^3=0.$$

In addition to the solutions $x=y=0$, there are exactly nine sets of solutions

$$x=\varepsilon p^{4/9}m^{(-4)/9},\ y=-\varepsilon^4 p^{7/9}m^{(-7)/9},$$

where ε is an arbitrary ninth root of unity.

165. Proposed by J. K. ELLWOOD, A. M., Principal of Colfax School, Pittsburg, Pa.

Solve $x^4-x=14$, by quadratics.

Solution by G. B. M. ZERR, A.M., Ph.D., Professor of Chemistry and Physics, The Temple College. Philadelphia, Pa.

$x^4-x=14$ or $x^4-16=x-2$.

$$\therefore x^2-4=\frac{x-2}{x^2+4}=\frac{x}{x^2+4}-\frac{2}{x^2+4}.$$

$$\therefore x^2-\frac{x}{x^2+4}+\frac{1}{4(x^2+4)^2}=4-\frac{2}{x^2+4}+\frac{1}{4(x^2+4)^2}.$$

$$\therefore x=2 \text{ or } x=-2+\frac{1}{x^2+4}.$$

$\therefore x=2$ or $x^3+2x^2+4x+7=0$.

$\therefore x=2$ or $=-1\frac{3}{5}$ nearly, or $-\frac{1}{15}[1\pm\sqrt{(-843)}]$ nearly.

166. Proposed by MARCUS BAKER, U. S. Geological Survey, Washington, D. C.

Solve
$$ax+by=2zx....(1).$$
$$cy+dz=2xy....(2).$$
$$ez+fx=2yz....(3).$$

Solution by the PROPOSER.

From (1), (2), and (3), respectively,

$$y=\frac{(2z-a)x}{b}=\frac{dz}{2x-c}=\frac{ez+fx}{2z},$$

whence
$$x(2x-c)(2z-a)=bdz....(4),$$
$$fx(2x-c)+ez(2x-c)=2dz^2....(5).$$